

# The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

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## Man-Power in Industry

THE Parliamentary debate upon man-power in industry has shown the necessity for careful conservation. This war is being fought on a totally different basis from the last war. Then the slogan was "Business as Usual." To-day we have at least learned this from the last war, that all our energies must be bent to the one purpose, and that our action must be co-ordinated with that object in view. There is no "business as usual." There is the business of the war; there is the private trade on which a large part of the nation depends to enable it to pay for the war; and above this there is the export trade upon which we also depend for the wherewithal to pay our way. No longer is there unregimented effort, no longer are all and sundry urged to join the Army; to each one is given his appointed place and each is asked to do his particular job as it best suits the nation that he should.

That is the theory of it. If the practice is a little different that is largely because, however carefully one may plan ahead, there is bound to be something unexpected, not to be foreseen even in the best-laid schemes of mice and men. There is evidence that all is not proceeding in quite the best possible way in the reconciliation of the rival claims of the fighting services and of industry. The Navy and the Air Force probably realise that they must have behind them a huge industrial army, an army many times bigger than the numbers of those who go down to the sea in ships or ascend to the heavens in aeroplanes. Without the mechanics and factories behind them they would be unable to sail or to fly. The Army is credited with the traditional obsession that men in uniform alone count. The view has been publicly stated that we should prevent really intelligent men from entering the Army. It is reminiscent of the three warlike brothers in *Princess Ida* who confessed in loud bass voices, "We are not intelligent." The argument, which is contained in a letter to *The Times*, states roundly that it is generally recognised that one of the gravest mistakes made in the last war was the employment of young men of first-class brains as subalterns in the Army. The wasteful sacrifice of H. G. J. Moseley is sufficient support for that contention. Moreover, men of outstanding intellectual ability are not likely to reveal their power in the performance of a subaltern's duties, and in general a plea is made that men of outstanding ability should be kept out of the fighting services.

It is of vital importance to the country that technicians should be retained in industry when they can do more good in that field than in the Army. It

is not necessarily a question of whether or not a man is fully trained. A labourer can fire a gun and can learn to shoot straight; so can a young partly-trained chemist or chemical engineer or plant operator. But the labourer will never become any of these things, though the partly-trained man will do so, perhaps long before this war is ended. There is evidence that in many respects firms are being denuded of essential men whose services are well-nigh indispensable for the provision of plant and materials. Instances are known of skilled men being drafted into the Army from which the combined efforts of their firms, the Ministry of Labour and the Ministry of Supply have so far found it impossible to reclaim them. It would appear that in most instances nothing short of a Cabinet decision will allow men who have spent a few months in the Army to be sent back into civil life, however essential their civil services may be. On other occasions quite a different spirit prevails. This leads us to the belief that there should be some better machinery for deciding between the rival claims of the fighting services and of the industry on which they depend.

The difficulty arises from the classification system adopted. Often a skilled man does not exactly fit into an official classification. As an example, constructional firms may be quoted. These firms frequently have skilled staffs whose business it is to start up new plant, to correct faults in existing plant, and generally to keep industrial plant working properly. These men are not chemists; they are not "charge-hands"; they are probably none of the official classifications; so they are not reserved for industry perhaps until they are 30 years of age. This is not an isolated instance. Many instances have come to our notice of key men who are not sufficiently covered by the official categories. *And these men are being taken.* We suggest, therefore, that the authorities should pay particular attention to this point. Only those with intimate knowledge of an industry can decide whether a man is essential to a firm or not. Tribunals should be set up before which employers can bring these difficult cases, and these tribunals should either consist of men from the industry concerned, or should have an expert from the industry as assessor. It is a very real necessity that the right man should be in the right place, and if such machinery as is here suggested were set up, and the decision of the tribunals were accepted without question by all concerned, much would be done to avoid hampering our essential munition services. "A place for each, and each in his place" must be our guiding principle.

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## NOTES AND COMMENTS

## The German Petrol Problem

FIGURES available from various German and Russian sources indicate that the petrol problem, for Germany, has a twofold face. In the first place is the much discussed problem of quantity, in the second, the rather neglected question of quality. As to quantity, impartial observers have estimated that, counting the maximum that Germany can hope to draw from Russia and Rumania, along with her own artificial production and miscellaneous small sources, Germany can muster about 9,000,000 tons of petrol per year, against a demand for war purposes which cannot be estimated below 13,000,000 tons. The Russian petrol, however, presents the serious inconvenience of being practically useless for many war purposes. Aviation petrol, normally, should have an octane number of at least 100, sometimes more, especially for high-speed high-efficiency planes. The Russian supplies available, even for home consumption, fall far below this. Russian-built motors are designed to consume a fuel with an octane number of 50 to 52, but even this figure is rarely reached in the fuels available, which, according to M. Irmin, writing in the semi-official Moscow journal *Petroleum Economy*, average an octane number of about 40. A motor designed for 30 h.p. cannot be used at more than about 20 h.p. without excessive knock and wear, Irmin states. Even so, the compression ratio of the motor has to be kept down, in Russian built apparatus, below 4.2.

## Some Suggested Remedies

GERMAN experts, who have been working on the possibility of improving the Russian petrols, have suggested that an addition of water to the petrol is of some help. The use of lead tetraethyl or iron pentacarbonyl is also a help. Water, however, if it helps in theory, presents the serious practical disadvantage of rusting the valves of the motors, while the supplies of lead tetraethyl are far from sufficient to permit treatment of all the petrol. Even so, these expedients can at best raise the octane number of the petrol sufficiently for ordinary motors. Supercompressed motors still cannot run on it. Suggestion has also been made that the Russian petrol might be mixed with benzol and alcohol, and

one Russian project calls for the use of 1,500,000 tons of benzol per year for this purpose, plus about 800,000 tons of alcohol. Apart from the fact that such quantities of benzol are not available to the Germans, the mixture still has much too low an octane number. The one feasible solution, it is believed in German circles, would be for the Germans to take over the whole of the Russian refineries and rebuild them. Russian refining methods, which manage to extract only 10 per cent. of this poor quality petrol from their crude oil, are at the bottom of the whole problem, and a complete reorganisation of refineries appears essential.

## Ichthyol from French Shale Deposits

SHALE deposits with a high ichthyol content occur in Alpine regions, notably in the Tyrol, which has been the principal source in the past. Rich veins also exist in the French Alps and it is reported in *L'Industrie Chimique*, February, 1940, that ichthyolic shales are being processed at Corbonod, near Seyssel, and at Saint-Champ, near Belley (Ain). The oil content varies from 5 to 10 per cent. The crude oil is redistilled *in vacuo* in order to isolate the fraction distilling between 100° and 255° C., this being the most valuable in the isolation of ichthyol. This fraction is sulphonated at a not too high temperature, neutralised with ammonia and washed. The middle layer containing the ichthyol is separated from the top layer of non-sulphonated oil and the bottom layer of inferior acidic tar. Ichthyol is isolated by treatment of the middle layer with sodium chloride. It is obtained as a thick, black liquid with an empyreumatic odour, containing 10 to 11 per cent. sulphur and consisting essentially of the ammonium salt of sulphoichthyolic acid.

## Catalysts for Medium Oils

FRENCH Patent No. 841,898, issued to the I. G. Farbenindustrie, suggests that good catalysts for the hydrogenation or cracking of medium and heavy hydrocarbons can be obtained by precipitating metal compounds from salt solutions mixed with gels obtained by precipitation. A suggested example is a catalyst prepared by dissolving 100 grams of sodium silicate containing 28 grams of silicic acid, in 900 grams of water. The silicic acid is precipitated with 23 grams of ammonium chloride dissolved in 150 grams of water. Then a solution of 28 grams of aluminium nitrate— $\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$ —in 150 grams of water is mixed in, and a concentrated ammonia solution added until the reaction of the whole liquid is alkaline. The liquid is then heated to boiling point, and filtered hot. The precipitate is washed in boiling water and then dried at 200° C. This can be used as a catalyst for the transformation of oils with boiling points between about 200° and 350° C. by passing the oil vapour over or through grains of the catalyst at a temperature of 460° C. at atmospheric pressure. Something over half the oil will be cracked into petrol. The catalyst can be regenerated by heating in air. Another method suggested is to dissolve 100 grams of sodium silicate, containing 28.1 grams of silicic acid, in 900 grams of water. This is precipitated with ammonium chloride as above, then the precipitate is filtered and washed. While still wet it is mixed with 28 grams of aluminium nitrate; the mixture is dried in a water bath dryer and heated until no further nitrogen gas is given off. This is used in the same way as the first type catalyst. Similar catalysts can be prepared with Si-Mg and Si-Mg-Al, Si-Al and Al-Mg, or with Si, Si-Mg, Si-Al, Si-Mg-Al, Al, Al-Mg, plus one or more of the following: Zn, Sn, Ti, V, Cr, Mo, W, Fe, Ni or Co.

# TEMPERATURE-INDICATING COLOURS

## The New "Thermindex" Series

THE introduction of Thermindex colours enables a permanent and definite indication of the temperature reached on a heated surface to be obtained by means of a sharp, clear-cut change of colour. They are offered in a form suitable for direct application to practically any surface simply by brushing or spraying, and they dry quickly at room temperature. When the temperature of the treated surface is then raised, the original colour of the pigment changes sharply at a definite point. A range of Thermindex colours covering many temperatures is available and it will thus be seen that the measurement of temperature and of temperature distribution on heated surfaces is very much facilitated.

### Metallurgical Applications

These colours are obviously of particular value in the engineering and metallurgical industries, notably in the internal-combustion and electrical branches of engineering, and, on the metallurgical side, for testing the heat of bearings and for taking note of the pouring and melting temperatures of certain alloys.

The attached table shows the temperatures indicated by those Thermindex colours at present offered; it will be noted that multi-change colours, which show several temperatures, and which are thus of particular interest, are included.

REF.	COLOUR CHANGE.	°C.
E-102	Pink to Blue Violet .. .. .	115
	to Grey .. .. .	310
GG-55	Mauve-Pink to Bright Blue .. .. .	140
	to Grey .. .. .	315
E-91	Dull Blue to Green .. .. .	145
	to Black .. .. .	155
F-07	Green Blue to Green .. .. .	150
	to Dark Greenish Grey .. .. .	180
69	Light Tan to Bronze Green .. .. .	150
	to Deep Purple Brown .. .. .	240
	to Pale Indian Red .. .. .	310
E-94	Bright Violet Blue to Bright Green .. .. .	155
	to Olive Green .. .. .	230
	to Dark Grey .. .. .	285
	to Light Grey .. .. .	290
	to Light Brown .. .. .	300
	to Buff .. .. .	340
E-106	Reddish Orange to Brick Red .. .. .	205
	to Brown .. .. .	230
	to Almost Black .. .. .	245
	to Medium Grey .. .. .	295
	to Dirty White .. .. .	335
G-75	Light Blue to Fawn .. .. .	210
F-41	Ochre Yellow to Brick Red .. .. .	225
E-104	Greenish White to Grey .. .. .	235
E-93	Grey Blue to Buff .. .. .	275
	to Creamy White .. .. .	290
F-21	White to Brownish Yellow .. .. .	320

Other colours are in course of preparation which will act as indicators in the temperature-ranges 30°-115° C. and 340°-650° C.

### Standard Exposure Period

While the change of colour is dependent mainly on the temperature attained, the length of time to which the colour is exposed to that temperature also has a slight effect. Thermindex colours have been standardised on an exposure period of 10 minutes, and the temperatures shown are those which produce the colour change within this interval. If, for instance, a colour that indicates a change at 200° C. is heated for a much longer period than 10 minutes at a few degrees less than 200° C., the actual colour change may take place at this slightly lower temperature, but in general the variation is less than 5° C. Where it is necessary to depart considerably from the standard time of exposure, it is not a difficult matter to calibrate the colour to meet these conditions.

Several points are to be noted with regard to the application of Thermindex colours:—

- (1). They should be thinned, for spraying or other work,

only with Solvent T, which is also an excellent solvent for cleaning brushes, etc.: for the latter purpose, xylol may be used if desired.

- (2). Solvent T or xylol may be used for cleaning off the coloured coating after use in special cases where its removal is necessary. Solvent T acts considerably more quickly than xylol.
- (3). Good adhesion is obtained only if the surface to which the colour is to be applied is thoroughly freed from grease and loose particles. Painted surfaces may be used if the paint is not attacked by Solvent T or xylol.
- (4). Normally Thermindex colours have been found to be reasonably resistant to oil vapour or splashes and thus to be suitable for use on engine parts coming into occasional contact with lubricating oils. The oil resistance may be improved by after-treatment with Fixative T. Further information on this point and also on the water-resistance of the colours will be given on request.

Thermindex colours are manufactured by Kendall Products, of Watford, and are sold exclusively by J. M. Steel and Co., Ltd., of London and Manchester.

## Glass for U.V. Estimation

### Limits for Cerous and Vanadous Oxides

A LIGHT-SENSITIVE glass which provides an easy means of quantitatively estimating the intensity of ultra-violet radiation is described by Upton (Glass Ind., 1940, 21, 3, 109-112). Many glasses are known which become discoloured by ultra-violet light, but generally the depth of colour is not proportional to the quantity of radiation absorbed, and also the colour sometimes acts as an internal filter to the radiation, preventing further absorption in the body of the glass.

Following up the discovery of Löffler, that glasses containing cerous and vanadous oxides show a colour change when exposed to bright sunlight, a number of glasses containing these oxides were prepared. The reaction occurring is  $\text{Ce}_2\text{O}_3 + \text{V}_2\text{O}_5 \rightarrow 2\text{CeO}_2 + 2\text{VO}$ , and is heat reversible above 300° C. The glass is normally green, due to the  $\text{V}^{III}$  ion, having one absorption maximum in the blue, and one in the red. After solarisation, these two maxima coalesce in the green region, and the glass turns purple. No change in the ultra-violet transmission itself occurs as a result of the colour change.

### Soda-Lime Glass the Best Type

It was found that the best type of glass to use is an ordinary soda-lime one. It was thought that addition of acidic oxides, such as  $\text{P}_2\text{O}_5$  or  $\text{B}_2\text{O}_3$ , would enhance the sensitivity of the glass by increasing the amount of trivalent vanadium present and decreasing the amount of pentavalent; these oxides certainly enhance the green colour of the glass, but at the same time prevent or slow up the colour change on solarising.

The glass used with most success contained 72 per cent.  $\text{SiO}_2$ , 12 per cent.  $\text{CaO}$ , 16 per cent.  $\text{Na}_2\text{O}$ . The amount of  $\text{V}_2\text{O}_5$  present must lie between 0.1 and 0.35 per cent., and of  $\text{Ce}_2\text{O}_3$  between 0.2 and 0.75 per cent.; too much  $\text{Ce}_2\text{O}_3$  causes a high U.V. absorption by this oxide itself; too much  $\text{V}_2\text{O}_5$  decreases the sensitivity of the glass. It is suggested that the best form of the glass for practical use is fibrillar: 50 mm. long, and not more than 1.2 mm. diameter; otherwise a core of unchanged glass will be observed after solarising, due to absorption of all the U.V. by the Ce. A comparison scale must be constructed by exposing fibres to light of known U.V. intensity for proportional times.



## Chemicals In South Africa

### New Motor Fuels—Cresol Dusts for the Locust Plague

**F**RESH encouragement is being given by the Union Government to the making of motor fuel in South Africa by the announcement that an improved blend will enjoy taxation privileges under the Customs and Excise Laws. Powers granted in July, 1917, have been invoked again by the Commissioner of Customs and Excise and advantage has been taken of the chance to specify a more efficient mixture than was then known. Any motor spirit now manufactured in the Union must contain 100 volumes of petrol, 100 volumes of absolute alcohol, and five volumes of benzol, or alternatively two volumes of wood naphtha, with half a volume of pyridine in 100 volumes of petrol. Where "doped" motor spirits are being made, containing ether or ethyl ether, 100 volumes of fuel must include one volume of wood naphtha or benzene to 10 of the "dope." The purpose of these rules is to maintain a high standard of quality in local motor fuel and to safeguard the Government's revenue from excise. At present fuel is being made in South Africa from torbanite in the Transvaal and from cane spirit in Natal.

A scheme sponsored by the Forestry Department to operate vehicles on charcoal fuel will, it is estimated, save 20,000,000 gallons of petrol in the Union each year. Government authorities have calculated that if proper use is made of the waste products of the South African timber industry—particularly of the plantations controlled by the State—it will be possible to reduce the Union's imports by one-eighth. Early in 1940 the first producer-gas plant to be manufactured in the Union was put on the road in Johannesburg. One Rand bus fleet is being changed to run on an amount of charcoal costing 4d. as far as it would run on a gallon of petrol. The Johannesburg Electricity Department is also experimenting with charcoal.

#### Low Toxicity of Organic Dusts

The possibility of attacking flying swarms of locusts by dusting them with poison from aeroplanes is indicated in the latest official report on locust research issued in Pretoria.

This mode of attack has been used in South Africa in the past, but was abandoned principally because of the danger of poisoning veld grasses. Tests carried out on a small scale by the Government locust research staff with two brands of dinitro-orthocresol dusts have given encouraging results against flyers and hoppers of both the brown and red locust. These dusts contain about 10 per cent. of the active ingredient and about 90 per cent. of inert carrier. They act as contact dusts and kill in from half an hour to two hours. Although they cannot be described as harmless to mammals, these dusts are much less toxic than arsenical substances. They have the further advantage that, being organic compounds, they eventually disintegrate and lose their toxicity. In the case of the brown locust, experience has shown that it is impossible to prevent the formation of flying swarms during incipient outbreaks. If these flyers could be destroyed before they laid eggs, large-scale outbreaks of hoppers could be avoided. Another interesting fact, revealed in field observation by the research staff, is that overstocking and trampling of the veld tend to create conditions favourable to the locust.

#### Chlorine Manufacture

One of the first of the new industries to be established on the Rand in consequence of the war is the manufacture of chlorine gas. A big pulp and paper manufacturing concern informed the Johannesburg City Council that it had decided to manufacture the gas if there was sufficient demand, and offered to supply the Council for its public health requirements at a cost considerably lower than the price of its last overseas contract. The city engineer suggested, and the Public Health Committee recommended, that the Council accept the offer at the confidential price quoted on a three-year basis, provided that the quality of the product was up to previous standards. Chlorine is also used extensively on the Rand in purifying water and in bleaching processes. Supplies have hitherto come from overseas, but the effects of the war on communications and costs make it desirable to ensure a continuous supply from local sources.

### Casein and Lactose from Skim Milk

#### Electrodialytic Process

**H**IGH-GRADE casein and lactose can be obtained directly from skim milk by electrodialysis, according to experiments reported by Kato (J. Soc. Chem. Ind. Japan, Sup. Binding, 1939, 42, 11, 376-377b).

Fresh skim milk was electrodialysed in the middle compartment of a 3-chamber cell, the separating diaphragms being of parchment or Cellophane, and a current of 1 amp. per 70 sq. cm. of membrane surface being passed between two platinum electrodes placed in water in the outer compartments. As electrolysis proceeds, the metal and acid ions in the milk migrate away from it, and its pH falls, causing the casein to become coagulated, a process which is complete at pH 4.3-4.6, i.e., about the iso-electric point of casein. The optimum temperature is 30°-40° C. The casein thus obtained, after filtering and washing, is of high grade and low ash content. The yield was 15-17 grams of casein from 600-650 gal. of milk, with a power consumption of 0.3 kw. per kg. of milk.

The whey-liquor remaining after the removal of casein can be treated for the isolation of its lactose content by heating it nearly to boiling to coagulate some of the protein in solution, then electrodialysing it as before under the same conditions of current and temperature. This time, however, the pH increases as dialysis proceeds, and complete coagulation of protein is accomplished when the pH rises above 9, a process requiring 2-3 hours in the cell used. The

solution of lactose thus obtained can be concentrated under reduced pressure to 30-40 per cent. sugar content, and then the lactose crystallised by addition of alcohol. A pure white product of 0.01 per cent. ash content is thus obtained, with a yield of 20-25 g. from 600-650 gal. of original milk, the power consumption being about 0.25 kw. per kg. of milk initially taken.

#### COMPOSITION OF AEROPLANE DOPES

Exposure tests on experimental dopes described previously lead to the following conclusions by F. W. Reinhart and G. M. Kline (J. Text. Inst., 1940, 4, A193, from Ind. Eng. Chem., 1940, 32, 185-193): (1) The choice of a satisfactory plastic base for a relatively non-inflammable aeroplane dope to replace nitrocellulose is limited to cellulose acetopropionate and acetobutyrate. (2) The optimum hydroxyl content of a mixed ester for use in an aeroplane dope is about 0.2 equivalent. (3) Solvent combinations can be formulated with cellulose acetate, cellulose acetopropionate, cellulose acetobutyrate and cellulose nitrate that lead to marked improvements in tautening and ageing of the dopes. (4) Aryl phosphate plasticisers with cellulose acetate, cellulose acetopropionate and cellulose acetobutyrate generally produce better initial tautness, greater resistance to slackening in wet weather and less variation in tautness during exposure than other types of plasticisers. (5) A close correlation exists between the properties of the films and the behaviour of the doped fabrics. (6) Doped fabrics on metal frames give less deflection, in general, than those on wooden frames.

## Poisoning in Chemical Industries

### Discussed by Royal Commission

THE question of dermatitis, and particularly the question of what constitutes "long continued exposure to dust or liquids," according to the terms of the Act, was raised at a recent sitting of the Royal Commission on Workmen's Compensation, when evidence was being given on behalf of the National Conference of Industrial Assurance Approved Societies. Sir Hector Hetherington (chairman) presided. It was generally stated that dermatitis was the industrial disease under the Act that was showing the greatest increase in cases year by year.

In the memorandum it submitted, the National Conference observed:—"A person suffering from dermatitis produced by dust or liquids... is not entitled to compensation under the Act on account of the disease if he is thereby disabled only for employment in the particular process in which the disease has been contracted or other processes involving risk of the disease unless the court is satisfied that the disease has been contracted through long continued exposure to dust or liquids in the industry in which he was engaged at the time of his disablement. What is 'long continued exposure,' is a matter of opinion," contended the National Conference. "Some authorities on the Act contend it only means more than a few days, others contend it means for some months, and others for some years. It would be far better if the period meant by 'long continued exposure' was definitely stated, as a fair amount of litigation arises as a result of this ambiguity."

Judge Stewart (a Commissioner): If you put a period on it, it might lead to hardship?—Mr. C. G. Izard (Secretary and Treasurer of the Prudential Industrial Assurance Approved Societies): I would rather you put the period short, in favour of the workman.

The General Council of the Bar (for whom Mr. D. P. Maxwell Fyfe, K.C., M.P., and Mr. G. J. Lynskey, K.C., appeared), who also gave evidence, observed, in regard to industrial disease: "It seems illogical that, when a disease of gradual onset is caused by the work but without negligence, the workman should not get the limited compensation given by the Act unless the disease is scheduled. On the other hand, the Council feels bound to give great weight to the views expressed by the first industrial diseases committee and the Holman Gregory Committee. Decisions as to the cause of diseases not specific to the employment would in many cases be guesswork, and litigation in the field of guesswork tends to irritation and expense. It is felt, too, that with the furtherance of medical research, it may be possible to schedule further diseases, and so add to the schemes existing."

The Council suggested an amendment to section 9, subsection 4(I) to bring in workmen who could not obtain work because of inability to sign a declaration that they had not suffered from a disease.

### Toxic Solvents

Expressing the opinion that it should be possible to add, without restriction, to the schedule of industrial diseases under workmen's compensation, the Royal College of Physicians, who gave evidence before the Royal Commission on Workmen's Compensation at last week's session, recommended that the many toxic solvents and similar substances introduced into industry from time to time should be tested by animal experiments before exposure to the workmen. The witnesses on behalf of the Royal College were Dr. Donald Hunter and Dr. H. MacCormac. Such a scheme as that detailed above, they contended, could have prevented many deaths from poisoning by dioxan and methyl mercury iodide, and it was suggested that the Home Office should be equipped with adequate staff and accommodation to make such experiments, if necessary in collaboration with the Medical Research Council. They also thought that some further organised research into industrial dermatitis and

industrial toxicology would be of great assistance in solving these problems.

Dr. Hunter said he would suggest that the use of certain toxic solvents should be held up temporarily until their action on the workers employed in the processes had been thoroughly investigated. Where drugs were newly brought into use, or where they were possibly put to new uses, it had been found after some months that they had a toxic action and there had been cases of delayed forms of poisoning. The discovery of their toxic action had been more or less accidental.

Mr. Smyth (a Commissioner) asked if some of the big chemical firms possessed their own experimental departments, and Dr. Hunter replied that that was so; for instance, the Imperial Chemical Industries. What the Royal College felt was that the Home Office should not wait until one of the London hospitals took in such a case of poisoning.

## Russian Apatite for Germany

### Improved Production Planned

APATITE output at Chibinogorsk, in the Kola Peninsula, N. Russia, has been considerably increased, and it is reported from American Consular sources in Germany that ore production approximates 10,000 metric tons daily. Production technique was improved in 1939 by the installation of advanced processes. Among other improvements, so-called red apatite, which formerly was a production residue, is now processed. A new process for utilising moraine mineral is now being tried. Plans have been drawn up for starting the construction of a new large apatite mine at the Jukspoor mountain in 1940, also the production of two new units at the Chibinogorsk apatite works.

Apatite is one of the principal raw materials that Germany is likely to call upon Russia to supply on a greatly increased scale as part of the projected economic collaboration between the two countries. Apart from the very insufficient domestic production of basic phosphate slag, Germany is dependent upon foreign sources for its requirements of crude phosphate, imported chiefly from overseas in the form of phosphate rock. Russia has participated in the German phosphate market to varying degrees in recent years, but has generally furnished only a very limited share of the German requirements, which are supplied mainly by the United States and Northern Africa.

Even before the outbreak of the war, Germany had for some time been encountering difficulty in procuring adequate supplies of crude phosphate, owing to lack of foreign exchange. In most recent times, insufficient supplies of sulphuric acid have also been an adverse factor in reducing production of superphosphate, the principal phosphate fertiliser carrier. German soil has long been suffering from a great deficiency of phosphate, conducive to poor crop results, and it would appear that Russia now offers the only source available to Germany for this fertiliser material, adequate supplies of which are indispensable for maintaining the nation's agricultural production.

### A.B.C.M. PARLIAMENTARY INDEX

The Association of British Chemical Manufacturers has now issued Supplement No. 3 to the Second Edition of the Index to Acts of Parliament and Statutory Rules and Orders affecting the Chemical Industry, containing the items which have been noted in their office up to about the beginning of March, 1940. Copies can be obtained from the publishers, Messrs. W. Heffer and Sons, Ltd., Cambridge, price 9d., post free. In the present Supplement no attempt is made to give an exhaustive account of Emergency Acts and Statutory Rules and Orders, a special list of which is published by H.M. Stationery Office, but a general indication of such Orders is given under the specific headings of matters of chemical interest. These headings are arranged in alphabetical order in the Supplement, and include such topical items as "Contraband," "Control Schemes" and "Defence Regulations."

## Recent Trade Literature

THE METROPOLITAN-VICKERS ELECTRICAL CO., LTD., have issued another of their "Girl" calendars. For many years these calendars have enlivened the drab surroundings of offices and workshops with their portraits expressive of typical British beauty. A London girl is featured in the latest calendar.

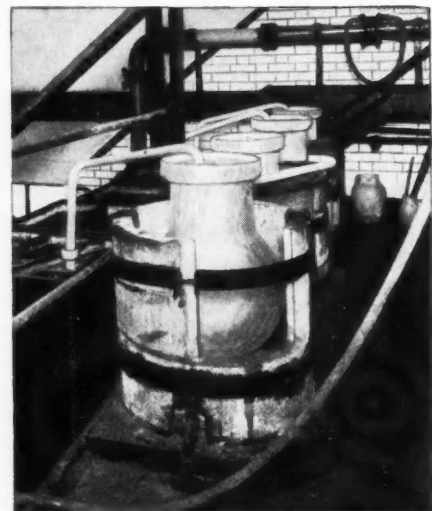
HAUGHTON'S METALLIC CO., LTD., have issued a catalogue describing their improved fittings for sulphuric acid and chemical plant. Details are given of non-rotative acid valves, acid resisting iron gland cocks, centrifugal acid pumps, atomisers for sulphuric acid chambers and acid-resisting metal acid elevators.

WORTHINGTON-SIMPSON, LTD., have recently developed an improved water-cooled air compressor which is described in their bulletin WS.1801. These compressors have been specially designed to meet the demand for modern high speed water-cooled machines suitable for direct coupling to electric motors and internal combustion engines running at speeds up to 1000 r.p.m. The two-stage (DA) type is suitable for pressures up to 150 lbs. per square inch and the single-stage (DAS) type is suitable for pressures up to 50 lbs. per square inch.

STANDLEY BELCHER AND MASON, LTD., recently issued their new price list of general and chemical scientific apparatus. A gigantic volume of 810 pages, this catalogue must be one of the most comprehensive works of its kind ever published. Practically every page is illustrated and contains detailed specifications and prices. As the list was compiled prior to September, 1939, however, many prices are incorrect and certain items of foreign origin may not be available. An index of 24 pages indicates the vast range of appliances listed. The catalogue also contains a page of extracts from reports on units of volume.

THE THERMAL SYNDICATE, LTD., recently issued a new illustrated price list of Vitreosil industrial ware. The new list contains only those articles which are more commonly required and which can be made by using existing manufactur-

many years' operation of plants producing hydrochloric acid by burning chlorine in hydrogen where resistance to acid attack and heat is provided by the all-Vitreosil construction. The burner comprises two concentric tubes, the inner one for



Distillation equipment constructed in Vitreosil.

chlorine and the outer tube for hydrogen. So far as the distillation equipment is concerned complete stills for the redistillation of acids are supplied. These sets are composed entirely of Vitreosil, including the condenser, and as a result they ensure the production of chemically pure acids.

Articles on portable steam turbines for emergency service, the splitting of centrifugal pump casing, speed control of the series motor and power plant in the laundry are among those contained in the April issue of the "Allen Engineering Review" published by W. H. ALLEN, SONS AND CO., LTD.

The March issue of the "Wild-Barfield Heat Treatment Journal," published by WILD-BARFIELD ELECTRIC FURNACES, LTD., marks the completion of the third volume of the journal and the sixth year of its existence. It contains an article by Dr. F. H. Haywood on "Diffusion and its Significance in the Heat-Treatment Shop" and a reprint of an article on "Magnetic Determination of Carbon."

CROFTS (ENGINEERS), LTD., Thornbury, Bradford, have issued the latest edition of their catalogue of "Standard Power Transmission Appliances S.140." This booklet is in its seventh edition and has been considerably enlarged, now consisting of some 540 pages. The comprehensive nature of its contents includes mechanical power transmission appliances and complete belt, rope, V-rope, chain and gear drives standardised to meet general industrial requirements. The last section is devoted to general engineering tables and will be of much interest to power users in all trades. Over 25,000 copies of previous editions of the catalogue are in general use.

"Nori" ware for use in chemical plants is featured in a folder issued recently by the ACCRINGTON BRICK AND TILE CO., Accrington. Produced from brick-earth, "Nori" ware is claimed to possess a valuable combination of physical properties. The brick-earth is crushed, ground and mixed to form a plastic material which is pressed to the desired form. The blocks are then transferred to modern kilns where they are burned at high temperatures that cause the material to vitrify. The finished product is impervious to acids and most other chemicals and notable for its extreme density. The efficiency of "Nori" ware in its resistance to chemical action is maintained over prolonged periods, it is stated, owing to its ability to withstand impact, attrition and exposure to liquids at high temperatures.

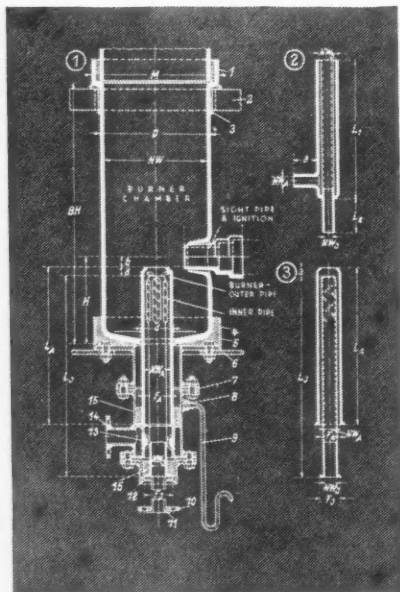


Diagram of a gas burner manufactured by The Thermal Syndicate, Ltd.

ing equipment. Larger or more complex articles require a longer period for delivery. The pages in the catalogue indicate varied uses for Vitreosil and among the industrial ware described are gas burners for the synthesis of hydrochloric acid and distillation equipment (see illustrations). The burners, it is declared, have been developed and proved over



## Personal Notes

PROFESSOR E. V. APPLETON, F.R.S., secretary of the Department of Scientific and Industrial Research, was honoured with the honorary degree of Doctor of Science in Convocation at Oxford University last week.

\* \* \* \*

DR. L. H. LAMPITT, chief chemist of J. Lyons and Co., Ltd., delivered the last of his three Cantor lectures on "Science and Food" at the Royal Society of Arts on Monday afternoon. Dr. E. F. Armstrong voiced the thanks of those present for the interest and excellence of Dr. Lampitt's lectures.

\* \* \* \*

The following were appointed at the annual general meeting held on April 24 to serve as the officers of the British Chemical Plant Manufacturers' Association for the ensuing year: Chairman, MR. B. L. BROADBENT (Thomas Broadbent and Sons, Ltd.); vice-chairman, DR. G. E. FOXWELL (Clayton, Son and Co., Ltd.); honorary treasurer, MR. W. S. KNIGHT (Kestner Evaporator and Engineering Co., Ltd.).

\* \* \* \*

Two Polhem medals (instituted in memory of the famous Swedish 17th century inventor, Christoffer Polhem) have been awarded by the Swedish Association of Engineers. The recipients are PROFESSOR WALODDI WEIBULL, of the Stockholm Royal College of Technology, for his treatise on "A Statistical Theory of the Strength of Materials," and PROFESSOR LENNART FORSEN, of the same college, for his thesis "On the Chemical Reactions in the Hardening of Cement."

\* \* \* \*

The chairman of the newly-formed Pharmaceutical Export Group and of the Executive Committee will be MR. A. MORTIMER, of the Wholesale Drug Trade Association, and MR. J. DAVIDSON PRATT will be vice-chairman. MR. W. J. WILLIAMS has been appointed secretary-manager of the Group and will operate from the Association of British Chemical Manufacturers, 166 Piccadilly, London, W.1. MR. G. DALRYMPLE (Ayrton Saunders & Co., Ltd.), MR. I. V. L. FERGUSON (Evans, Sons, Lescher & Webb, Ltd.), MR. G. E. PEARSON (Burroughs Wellcome & Co.), MR. C. A. O. RIDEAL (May & Baker, Ltd.), MR. O. F. C. SHAW (British Drug Houses, Ltd.), and MR. S. WHIFFEN (Whiffen & Sons, Ltd.) make up the Executive Committee of the Group.

## OBITUARY

MR. CHARLES RAGGETT, who died last week at Frinton, aged 72, was editor and proprietor of *The Welding Journal*, and convener-founder of the Institute of Welding.

\* \* \* \*

DR. CARL BOSCH, the distinguished German chemist, died recently at Heidelberg, aged 66. He was president of the I. G. Farbenindustrie A.G., and was awarded the Nobel Prize for Chemistry in 1931.

## New Control Orders

### Sulphuric Acid

THE Minister of Supply has made the Control of Sulphuric Acid (No. 2) Order which revokes the No. 1 Order. It does not materially alter the system of control applicable to the sulphuric acid industry, but it clarifies the earlier Order in the light of the experience gained by the Ministry in operating this and other Orders.

A direction is also issued raising the maximum prices which may be charged. From May 1 the addition which may be made to the basic price in the case of 77 per cent. acid is 15s. 6d. per ton and pro rata for acid of other strengths. This increase is based on the increase in manufacturing costs since the outbreak of war other than the increase in the price of pyrites and sulphur, and is intended to cover manufacturing costs for some months to come. On August 1 the price of

77 per cent. acid may be increased above the basic price by 20s. a ton. This increase is based on the higher price which is to be charged by the Ministry from May 1 for sulphur and for pyrites. The Direction also provides for price increases in the case of re-agent acid. The Direction, in addition, enables the sulphuric acid manufacturer to recover his additional delivery costs, and, where railway tank waggons are loaned by him, demurrage may be charged.

### Import Licensing Amendments

An Open General Licence has been issued permitting the importation without separate licence from April 30 of essential oils, natural or synthetic and mixtures thereof, including terpeneless oils, from any part of the British Empire (except Hong Kong, Palestine and Transjordan) and from France and the French Empire.

## British Chemical Prices

### Market Reports

TRADE throughout the industrial chemical market has followed a very even trend during the past week; the movement being about average for the period. Tartaric, citric and acetic acids continue in steady call and chlorate of soda is in active request. Ex-contract deliveries are being taken up in satisfactory quantities and a fair volume of inquiry for new business is reported. Hyposulphite of soda is now quoted at £17 15s. per ton, but elsewhere the price position has remained steady with no important alterations in quotations to record. Business in coal tar products has been of moderate dimensions this week with quotations on the whole remaining unchanged at recent levels. A fair amount of business is reported in solvent naphthas and pyridine.

MANCHESTER.—Business in chemical products on the Manchester market during the past week has been on quietly steady lines in most departments, whilst so far as prices are concerned, although further actual changes on balance for the week have been few, the general tendency is still decidedly firm. A good call for contract deliveries of the leading heavy chemicals has been reported. In the by-products section there is still a fair amount of inquiry about for most of the light distillates, but in other directions new bookings have been only moderate.

GLASGOW.—The past week has seen further advances in the price of raw materials due, in certain cases, to the cost of packages, and to the rise in freight rates. Further increases are unavoidably due to the rise in railway rates. The export drive is having a definite effect on certain sections of the market and causing a local shortage of such materials as whiting, trisodium phosphate and carbon tetrachloride. Within these limits a steady amount of business is being transacted on a strictly spot basis.

### Price Changes

In view of the necessity for economising paper, the complete list of Weekly Prices of British Chemicals will not be published in every issue of *THE CHEMICAL AGE* until further notice. This useful feature will, however, appear at least once a month, and a list of the price changes during the intervening weeks will appear every Saturday. The list below shows the current prices as compared with our last complete list, published on April 20.

**Naphtha.**—Solvent, 90/160°, 1s. 7d. to 1s. 8d. per gal.; solvent, 95/160°, 1s. 11d. to 2s., naked at works. MANCHESTER: 90/160° 1s. 9d. to 1s. 11d. per gal.

**Naphthalene.**—Crude, whizzed or hot pressed, £10 to £11 per ton; purified crystals, £22 per ton in 2-cwt. bags; flaked, £23 15s. per ton. Fire-lighter quality, £6 to £7 per ton ex works. MANCHESTER: Refined, £26.

**Pyridine.**—90/140°, 19s. to 25s. per gal.; 90/160°, 18s. 6d. to 19s. 6d.; 90/180°, 4s. to 5s. per gal., f.o.b. MANCHESTER: 18s. to 21s. per gal.

**Sodium Hyposulphite.**—Pea crystals, £17 15s. per ton for 2-ton lots; commercial, £13 10s. per ton. MANCHESTER: Commercial, £13.

**Sodium Sulphite.**—Pea crystals, spot, £16 per ton d/d station in kegs; £11 per ton d/d station in bags.

### Oil Prices

**Linseed Oil**, for the period ending June 1, raw, £47 10s.

ACCORDING TO THE *East Asia Economic News*, the Dai Ichi Industrial Chemicals Manufacturing Corporation is to erect a large soap works in Tsinan, North China. The Shiseido Cosmetics Manufacturing Company also have a soap factory (Japanese-owned) under erection in Tientsin.

## General News

I.C.I. CHEMICAL EXPORT SALES DEPARTMENT are returning from Belmont, Mill Hill, on May 14 to Millbank.

BUYERS FROM GREAT BRITAIN visiting the Paris Fair, which is being held from May 11 to 27, can obtain tickets for their return journey on the French Railways at 40 per cent. reduction on the sum of two single fares.

THE KILMARNOCK BRASS FOUNDRY CO., LTD., are disposing of a quantity of brassfounders' and finishers' machinery, plant, and stock, which will be sold by auction at 15 Wellington Street, Kilmarnock, on May 8.

A NEW TRADING WITH THE ENEMY ORDER directs that 943 specified persons, including firms and banks, carrying on business in various non-enemy countries "shall be deemed to be enemies for the purposes of the Act."

VOLUME 21 OF THE PROCEEDINGS of the Chemical Engineering Group, Society of Chemical Industry, has just been published (price 21s.). It contains the yearly report and the paper and discussions presented in 1939, including the notable "Symposium on Gas Purification," and the "Conference on Safety in Chemical Works."

THE LIGHT CASTINGS INDUSTRY IN STIRLINGSHIRE, which has been suffering from lack of work owing to the cessation of house-building schemes, will shortly receive an impetus by an order for high explosive shells. Two foundries have secured orders for the production of thousands of shells each week, a move which is expected to provide work for several hundred men.

THE OLD NORTH ARGYLL LIMESTONE INDUSTRY is being revived. Messrs. H. and J. MacCowan, proprietors of the Cullipool Slate Quarries, have secured a lease of the old Kilchrenan lime works, which have been idle for several years. New plant is being installed to crush the stone, and a number of local men will be employed.

CHINA CLAY SHIPMENTS FOR MARCH were 59,367 tons (February, 47,820 tons). Though the tonnage was close on 14,000 tons below that of March, 1939, the industry is proceeding very satisfactorily in the circumstances. An interesting feature of the March statistics was that over 11,000 tons were conveyed by rail to inland manufacturing towns in order to save shipping; in this direction the G.W. Railway has set up a record.

AS THE RESULT OF FURTHER DISCOVERIES of wolfram, which was produced there in considerable quantities during the last war, the Buttern Hill Mine at Altarnun, near Launceston, Cornwall, is to be reopened next Monday. A lease of the mine, together with an area of the surrounding land, has been taken by the Beralt Tin and Wolfram Company, Ltd., for the production of those metals.

THE FIRST OF THE WAR-TIME ADDITIONS to the British Pharmacopoeia is to consist of a monograph on an emergency substitute for cod liver oil. It will be published soon by authority of the General Medical Council. The oil selected as the substitute vehicle for vitamins A and D, to which is due the virtue of cod liver oil, is groundnut oil, expressed from the seeds of *Arachis hypogaea*, a native of Brazil, which is now extensively cultivated also in India, West Africa and China.

THE REVIVAL OF THE INDUSTRY of collecting and preparing kelp for iodine manufacture in the Western Islands is suggested in a memorandum sent to Mr. J. Colville, Secretary of State for Scotland, and signed by many leading men in the Scottish Highlands. It is pointed out that large and increasing quantities of kelp are being purchased in Ireland at a substantial price which could equally well be procured from the Western Islands. The Government is also urged to take steps to establish war industries and other factories in the Highlands.

MESSRS. LONGMANS, GREEN AND Co. announce the publication, later this month, of Miall's "New Dictionary of Chemistry," priced at £2 2s. An imposing list of the contributors who have assisted Dr. Miall in the editing of the work lends support to the claim that this volume should find a place in all technical libraries and chemical departmental libraries. The subject-matter is stated to be so presented that it will be of value both to advanced chemists and to those with only a small knowledge of chemistry who require concise and general information. References to fuller information will be a valuable feature.

## From Week to Week

THE RATIONING OF GLUCOSE to trade users will probably start on June 1, it was stated by the Ministry of Food on Wednesday.

THE FIRST STAGE of the reconstruction scheme of the Gartsherrie Iron Works of Messrs. Bairds and Scottish Steel, Ltd., has begun. The scheme comprises the erection of a battery of 35 coke ovens, with by-product plant, at an estimated cost of £300,000. It is expected that the project will be completed towards the end of 1941.

THE CHEMICAL SOCIETY has just issued *Annual Reports on the Progress of Chemistry for 1939* (Vol. xxxvi) at the usual very reasonable price of 13s., post free. The volume is arranged on the accustomed plan, with sections devoted to Radioactivity and Sub-atomic Phenomena, General and Physical Chemistry, Inorganic Chemistry, Crystallography, Organic Chemistry, Biochemistry, and Analytical Chemistry. It is almost superfluous to say that the contents are of the usual excellence. The two indexes—author and subject—add enormously to the value of the volume.

## Foreign News

AN ASBESTOS DEPOSIT has been discovered some 50 km. from Sverdlovsk (Urals). Preparatory work for its exploitation has already begun.

THE ZERNESTI CELLULOSE FACTORY, Rumania, has increased its production capacity by 30 per cent., by the installation of two new steam cookers.

NEW ZEALAND'S KAURI GUM EXPORTS for last year were worth £N.Z.112,650 (£N.Z.103,777 for 1938). Between the two years, exports of casein from the Dominion dropped in value from £N.Z.98,030 to £N.Z.69,267.

TRADING PROFITS of the S.A. d'Electro-Chimie, d'Electro-Metallurgie et des Aciéries Electriques d'Ugine for 1939 totalled 89,558,354 fr. A total dividend for the year of 85 fr. on the old and 35 fr. on the new shares will be distributed.

HIGH YIELDS OF ACETYLENE FROM METHANE by cracking treatment in the electric arc have been obtained in Russia by N.P. Bozko by operating at low pressures. . . . *J. App. Chem.* (U.S.S.R.) 1939, 1825.

THE RUBESCHNAJA COMBINE, which controls the Russian dyestuffs and intermediates industry, is installing a plant for isolation of maleic anhydride from by-products of phthalic anhydride manufacture from naphthalene.

## Forthcoming Events

THE THIRTIETH ANNUAL MAY LECTURE of the Institute of Metals, on "Engineering and Atomic Transmutation," will be delivered by Professor J. D. Cockcroft, M.A., Ph.D., F.Inst.P., F.R.S. (Jacksonian Professor of Natural Philosophy, University of Cambridge), in the Hall of the Institution of Mechanical Engineers, Storey's Gate, London, S.W.1, on May 8, at 7 p.m.

AT A MEETING OF THE CHEMICAL SOCIETY on May 16 at 6 p.m., Professor W. N. Haworth, D.Sc., F.R.S., Nobel Laureate, will deliver the Seventh Pedler Lecture, entitled "Recent Developments in the Chemistry of Carbohydrates," in the Lecture Theatre of The Institution of Mechanical Engineers, Storey's Gate, London, S.W.1.

A GENERAL DISCUSSION OF THE FARADAY SOCIETY on The Hydrogen Bond, in which several noted chemists and physicists will take part, will be held on May 17, from 2.30 to 6.30 p.m., in the Lecture Theatre, the Royal School of Mines, Imperial College of Science, S. Kensington, S.W.7.

THE NATIONAL SAFETY FIRST ASSOCIATION is holding a congress at 52 Grosvenor Gardens, London, S.W.1, on May 17. Mr. A. W. Garrett, H.M. Chief Inspector of Factories will deal in a general way with war-time safety problems in factories; there will be a paper on "How to Train New Employees in Safety," by Mr. B. Ungerson of the National Institute of Industrial Psychology, in the morning; and in the afternoon, Mr. H. Malin of B.T.H., Rugby, will deal with "Specific Teaching for New Employees about Machine Tool Hazards." There will also be an address after lunch by Sir John Anderson, on "War-time Safety Measures affecting Education Authorities and Industrial and Transport Undertakings."



## Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for errors that may occur.

### Mortgages and Charges

(Note.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every company shall, in making its Annual Summary, specify the total amount of debt due from the company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an \*—followed by the date of the Summary, but such total may have been reduced.)

**BRITISH BYE-PRODUCTS, LTD.**, London, S.W., manufacturers of gas by-products, etc. (M., 4/5/40.) April 18, £1500 debenture to W. S. Bryan, Barking; general charge. \*Nil. January 14, 1940.

**MARCUS H. BARROW AND CO., LTD.**, Liverpool, drysalers. (M., 4/5/40.) April 20, debenture to Barclays Bank, Ltd., securing all moneys due or to become due to the Bank by way of transfer of a debenture dated October 28, 1936, in favour of the Union Bank of Manchester, Ltd.; general charge. \*£6545 (bankers). May 25, 1938.

### Satisfactions

**BRITISH BYE-PRODUCTS, LTD.**, London, S.W., manufacturers of gas by-products, etc. (M.S., 4/5/40.) Satisfaction April 18, £1000, registered November 2, 1937.

### Companies Winding-Up

**SOYA BEAN CULTIVATION AND BY-PRODUCTS, LTD.** (C.W.U., 4/5/40.) 1 Beauchamp Road, East Molesey, Surrey. Winding-Up Order April 22, 1940.

### Companies Winding-Up Voluntarily

**DUNLOP RUBBER COMPANY (SOUTH AFRICA), LTD.** (C.W.U.V., 4/5/40.) Creditors' claims to John Herbert Lord, Wardington Lodge, Wardington, Banbury, Oxon, by May 16th. All debts of the company will be paid in full.

**WOLFRAM PRODUCTS AND REFINERIES, LTD.** (C.W.U.V., 4/5/40.) Creditors' claims to Herbert Henry Marks, 10 Coleman Street, London, E.C.2, by May 31.

## Company News

**British Drug Houses, Ltd.**, have raised their dividend for 1939 by two per cent. to eight per cent., less tax.

**Lewis Berger and Sons, Ltd.**, have announced an interim dividend of 6 per cent., less tax, on the ordinary shares, payable May 10.

## Chemical and Allied Stocks and Shares

**B**USINESS on the Stock Exchange this week has shown continued demand for Government securities and other first-class investment stocks. On the other hand, ordinary shares of industrial companies have been uncertain, there being a disposition to await full details of the pending Dividend Limitation Bill.

\* \* \* \*

The prevailing belief is that, judging from dividend payments made during the pre-war standard period, most shares of chemical and allied companies are reasonably well placed in regard to the distributions that will be permitted during the period of the war. Imperial Chemical paid 8 per cent. last year, and its highest payment in the pre-war standard period was 8½ per cent. At 31s. 7½d. the ordinary units are a few pence higher on the week, as are the preference units, which at 32s. 9d. have more than held their recent rise. Borax Consolidated, whose dividend last year was 7½ per cent., would, earnings permitting, be able to pay 10 per cent. in any year during the war, this being the highest rate which ruled in the pre-war period. United Molasses, Cerebos and Reckitt and Sons ordinary were among other shares which maintained a relatively firm appearance on market views as to the dividend outlook; publication of the Cerebos results is imminent. United Molasses at 26s. 6d. were the same as a week ago, while in other directions, British Match were better at 34s., and Pison Packard were firmer at 40s. B. Laporte, however, transferred at the lower level of 67s. 6d. British Drug Houses remained around 23s. 9d. on the dividend.

\* \* \* \*

Lever and Unilever were 6d. down at 29s. 3d., but the 7 per cent. preference were 26s. 10½d. compared with 25s. 7½d. a week ago, and the 8 per cent. preference 26s. compared with 25s. 6d. British Oil and Cake Mills preferred improved from 40s. 9d. to 41s. 9d. and United Premier Oil and Cake ordinary were 9s. or within 3d. of the price ruling a week ago. Valor ordinary shares remained at 27s. 6d. Swedish Match were maintained at around

Goodlass Wall and Lead Industries, Ltd., have declared a dividend of six per cent. and a bonus of one per cent. on the ordinary shares for the year 1939. Similar payments were made in 1938.

**The Anti-Attrition Metal Co., Ltd.**, have declared an interim dividend of 3½ per cent. actual, less tax, on the ordinary shares on account of the year ending July 31, 1940.

**The British Match Corporation, Ltd.**, has declared a final ordinary dividend of 5 per cent., making 7½ per cent. for the year (same). The net profit was £451,20 (£447,371).

**The John Thompson Engineering Co., Ltd.**, announce a trading profit of £371,706 (with income from investments, £382,525), a record figure. A final dividend of 12½ per cent. on the ordinary shares is recommended.

**B. Laporte, Ltd.**, have announced that consent of the Treasury has been obtained to an issue of 58,333 ordinary shares in the company at £2 10s. for each one pound share. It is proposed to issue these shares to the ordinary shareholders in the proportion of two shares for every complete nine ordinary shares held.

**Van den Berghs and Jurgens, Ltd.**, which is controlled by Lever Brothers and Unilever, Ltd., report trading profits for 1939 of £1,527,622, which is £269,954 more than in 1938. The final ordinary dividend is 8½ per cent., tax free, making 12½ per cent., tax free, for 1939, against 12½ per cent., less tax, in the previous twelve months. Contingencies reserve again receives £50,000, but there is no transfer to general reserve, which in 1938 was credited with £100,000. Allocations leave a surplus of £200,115 to be carried forward, against £187,963 brought in.

## Chemical Trade Inquiries

**British India.**—The Director-General, India Store Department, Belvedere Road, Lambeth, London, S.E.1, invites tenders for acid, boric granulated and pure B.P. and borax commercial. Tenders due May 8. Forms of tender obtainable from the above at a fee (which will not be returned) of 5s.

**Egypt.**—The Commercial Secretary to H.M. Embassy at Cairo reports that the Egyptian Ministry of Public Health is calling for tenders for the supply and delivery of oxygen cylinders, demijohns, bottles, jars, etc., of various capacities, required during the period from May 1, 1940 to April 30, 1941. Tenders should be addressed to the Director of Stores, Ministry of Public Health, Cairo, Egypt, by whom they will be received up to 11 a.m. on June 4, 1940. (Ref. T. 18961/40).

**France.**—An agent established at Lyons wishes to obtain the representation, on a commission basis, of United Kingdom manufacturers of chemicals for textile dyeing and printing for the Isère, Rhône and Loire Departments. (Ref. No. 232).

**Mexico.**—A firm of agents established at Mexico City wishes to obtain the representation, on a commission basis, of United Kingdom manufacturers of gum arabic, cream of tartar, citric acid for Mexico. (Ref. No. 275.)

10s. Distillers were firmer at 67s. Monsanto Chemicals 5½ per cent. preference were maintained at 22s. 6d. and Greeff-Chemicals Holdings 5s. units were quoted at 5s. 7½d.

\* \* \* \*

Iron and steel securities were relatively steady, it being realised that the industry is likely to remain very actively employed and that in most cases the pre-war standard will permit dividends at last year's rates. On this basis yields at current prices are not unattractive. Dorman Long, for instance, yield over 8½ per cent. on last year's 10 per cent. payment. Tube Investments and Stewarts and Lloyds are among other companies which, if earnings are sufficient, will be allowed to maintain dividend rates. A similar position exists in regard to Babcock and Wilcox, and in this case publication of the financial results is imminent. Hopkinsons is keeping its distribution at 15 per cent., and the quotation for the shares has remained at 45s. In other directions, General Refractories were around 9s. 3d., and British Plaster Board 5s. shares had a firmer appearance at 9s. 9d.

\* \* \* \*

Sentiment in regard to Boots Drug continued to be influenced by the knowledge that war-time regulations of the distributions of public companies will not permit payment of the long-expected scrip bonus, and the 5s. shares were lower on balance at 39s. 4½d. On the other hand, Beechams Pills deferred at 8s. 10½d. had a firmer appearance; declaration of the final dividend is imminent. British Aluminium, British Oxygen and a number of other shares on which the market had been hopeful of higher dividends this year were lowered in price under the influence of the dividend limitation regulations.

\* \* \* \*

Anglo-Iranian, "Shell" and various other oil shares maintained a slightly better tendency, awaiting the dividend decisions of leading oil companies due at this period of the year.

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General Secretary, B.A.C. LONDON, W.1

'Phone: Regent 6611

### CLASSIFIED SECTION

**NOTE:** Trade announcements, other than strictly second-hand and job lines, cannot be inserted in these pages except by firms whose advertisements run in the display columns

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(2d. per word; minimum 18 words; 3 or more insertions, 1½d. per word per insertion. Sixpence extra is charged when replies are addressed to box Numbers.)

**CAPITAL.** Bank official (retired), having procured from £2,000 to £40,000 for numerous companies, proofs available, has clients requiring active and non-active directorships with investments of £2,000 to £10,000. Write C.B.O., c/o Dixon's, 195 Oxford Street, W.1.

### FOR SALE

(2d. per word; minimum 18 words; 3 or more insertions, 1½d. per word per insertion. Sixpence extra is charged when replies are addressed to box Numbers.)

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**1,000 STRONG NEW WATERPROOF APRONS.** To-day's value 5s. each. Clearing at 30s. dozen Also Large Quantity Filter Cloths, cheap. WILSONS, Springfield Mills, Preston, Lancs. Phone 2198.

**CHARCOAL, ANIMAL, and VEGETABLE**, horticultural, burning, filtering, disinfecting, medicinal, insulating; also lumps ground and granulated; established 1830; contractors to H.M. Government.—THOS. HILL-JONES, LTD., "Invicta" Mills, Bow Common Lane, London, E. Telegrams, "Hill-Jones, Bochurch, London." Telephone: 3285. East.

**50,000 FEET** brand new Balata and Rubber Belting, all popular sizes. Every belt guaranteed and sent on approval at bargain prices. Write for stock and price lists, F. Taylor & Sons (Manchester), Ltd., Barr Hill Works, Salford, 6, Lancs.

**100 REBUILT** Hydro Extractors by all leading makers from 18 in. upwards with countershafts attached and safety covers. Jacketed Steam Pans, various sizes. List on request. Seen at Randalls, Arundel Terrace, Barnes. Telephone: Riverside 2436.

RICHARD SIZER, LIMITED, OFFER THE FOLLOWING:—

Raymond 6-Roller GRINDING MILL, under-driven, complete with its cover and fan, suitable for pulverised coal fuel.  
2 Circular OIL BLENDING PANS, about 8 ft. diameter by 10 ft. deep, with vertical agitators, cross shaft and fast and loose belt pulleys.

Two steam jacketed ROTARY DRYERS OR MIXERS, 14 ft. long, 4 ft. diameter, mounted on ball bearings and each of 1,000 gallons capacity.

Horizontal belt-driven VACUUM PUMP, about 12 in. by 12 in. by Pearn.

Twelve other various MIXERS.

Three Gardner and Hind & Lund Steam Jacketed "U" shape RAPID DRYERS, 6 ft., 5 ft., and 3 ft. 6 in. long, belt and gear driven, and with bottom outlets.

7 Rivetted OIL STORAGE TANKS about 13 ft. 6 in. long by 8 ft. wide by 8 ft. and 9 ft. deep, and larger ditto capacities from 22 tons to 65 tons each.

Three WOOD FILTER PRESSES, 36 in. square, centre fed, with separate outlet taps to each plate.

Twenty-five Various SIFTING AND DRESSING MACHINES.

Seventeen 500-ton and 400-ton pressure HYDRAULIC PRESSES with 16 in. rams, steel cylinders, and extra heavy mild steel columns, suitable for various trades.

Enclosed MILNE SINGLE ROLLER DRYING MACHINE suitable for Vacuum; 186 ft. of 10 in. GRAVITY CONVEYOR with ball bearings. SLAT CONVEYORS 21 in. wide, 50 ft. and 80 ft. centres.

42 in. Broadbent electric driven HYDRO EXTRACTOR with 10 h.p. Motor.

Ten Jacketed and plain FILTER PRESSES of the plate and frame and chamber type, from 13 in. to 40 in. square.

LIST 739 JUST AVAILABLE: COPY SENT UPON APPLICATION.

RICHARD SIZER, LIMITED, CUBER WORKS, HULL. Telephone: 31743 (3 lines). Telegrams: "Sizer, Hull."

## 600

**HORIZONTAL** Cast Iron FILTER PRESS, by Whitehead & Pool, Ltd., fitted with 36 plates to form cakes 3 ft. 0 in. square by 2½ in. thick, arranged with massive closing head operated by twin buttress screws, each plate fitted with side discharge cock running into trough on frame of press.

Light Spirit Distillate CONDENSER and SEPARATOR; 9 ft. 6 in. high by 2 ft. dia. Separator portion 2 ft. 6 in. deep, coil being single nest 21 turns of 1½ in. tubing.

Welded Steel MIXING PAN; 4 ft. 6 in. by 5 ft. 0 in. deep, overdriven agitator with four cast iron paddles, wrought iron external steam heating coil 1 in. dia., planished steel casing, steel covers, cocks and valves.

Hydraulic Phosphor Bronze FILTER PRESS, by S. H. Johnson, fitted with 17 plates and 18 frames, having filtering surface of 28½ in. dia. The head is hydraulically operated and is withdrawn by subsidiary hydraulic ram, complete with 3-throw ram pump.

Unused BALL MILL, by Ernest Newall, approx. 3 ft. 9 in. internal dia. by 7 ft. 0 in. long, lined throughout with nickel iron linings, complete with ball charge.

Steam Jacketed Open Top MIXER; 3 ft. 4 in. dia. by 4 ft. 3 in. deep, fitted with agitators, driven through fast and loose pulleys, fitted with 2 in. flanged outlet in bottom. TWO AVAILABLE.

GEORGE COHEN  
Sons & Co., Ltd.,  
STANNINGLEY, LEEDS.

